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C. P. Close, Senior Extension Horticulturist

A HAPPY NEW YEAR TO ALL

This New Year's greeting is a little late, but it is none the less sincere. Old 1936 has slipped out of existence, but really did leave a lot of cheer and hope for the new year. Much of our old outlook on extension is gone forever, and now new problems face us, demanding attention. There is more of pleasure in sight mixed up with our work than we have ever yet enjoyed. Hard work there will be aplenty, but we should and must learn how to really live and play. Then how are we going to contact and fit into these new Nation-wide lines as they affect horticulture; namely, resettlement, soil conservation, and soil erosion? If any of the State specialists have entered these fields, will they kindly let us know how they made connections and what they have in mind? A few of our force have one ear on the ground now awaiting the signal of what, how, when, and where to begin.

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UNITED STATES DEPARTMENT OF AGRICULTURE
Division of Cooperative Extension, and Bureau of Plant Industry Cooperating

EDITORIAL

The Atlantic City Extension Conference

This conference was a rousing one, the best we have ever had. Although the attendance was not so large as we had hoped, the high quality of the addresses, the earnest discussions on methods and results, the good-fellowship of all present, the personal experiences related, the meeting of old and new friends in extension, and the inspiration for broader and better work by all, made this an outstanding conference long to be remembered. The one sad feature of it all was the fact that we, as a group, can meet together so seldom that we miss one of the greatest opportunities imaginable to acquire facts, methods, training, a broad outlook on extension, and to rub shoulders with our fellow workers. Most of those present had to pay a part of, or all, their expenses, but it was a good investment.

Five splendid addresses were prepared for the occasion, and these were splendid addresses of some of the highest grade horticultural extension work under way today. But read them for yourself; they are on following pages. Of course, some of the boys had to cast sly jabs at the Federal representative for his continual reference to State maps, tests versus demonstrations, meetings versus conferences, and other items appearing in The Federal Extension Horticulturist. Every extension man, and the one extension woman present, gave an account of one or more lines of work and methods followed. This was one of the big features of the evening. Then every visitor was called on for remarks. Each one expressed pleasure in having the privilege of seeing and hearing us in action. One noted international seedsman felt like the minister who when given some spiced and brandied peaches said he liked best the "spirit" in which they were given; this man liked the "spirit" of our deliberations.

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"For downright enjoyment in life the best thing to have up your sleeve is a funny-bone." --Uncle Ezra.

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TRUE STORIES FROM THE STATES

Have you noticed in recent issues of The Federal Extension Horticulturist how the landscape specialists are absorbing most of the "true stories" space? It seems as though the fruit and vegetable specialists would like to share some of this space. They are welcome to it; it's free. Who will be first?

In this number Norman A. Morris tells about leader-training in landscape work in Iowa. To refresh your memory on the Van Bloom project, refer to page 6 in no. 6 of the F. E. H. of December 1, 1936. The first paragraph following is quoted from a recent letter from Mr. Morris. The other five paragraphs cover his leader-training message.

"You will recall that practically all our farm projects are conducted by the leader method. We conduct approximately four such projects each year. In each project, there are four groups of 8 to 15 farms represented. In most counties, this means 60 farmsteads assisted in exactly the same manner as the Van Bloom's. These are our leaders for the county. Of course, all do not attain the results of the Van Bloom's, but there are a good many that have shown better results. We were more fortunate in Mrs. Van Bloom's case in that she kept an excellent photographic record. You are familiar with the difficulty of getting good pictures, and we find that many of our best examples of improvement are impossible to photograph satisfactorily to show the results."

Leader-Training in Iowa

There is probably no field of extension work which is so broad as the field of landscape architecture where projects range all the way from town planning to planting petunias at the corner filling station. Naturally, if such a varied program is to be attempted, the specialist must consider every possibility of making his work effective.

An extension survey made by the United States Department of Agriculture indicates that the greatest single factor found to affect adoption of practices was indirect influence, the spread of information, which one person has received, to his neighbor. This result emphasizes the value of proving facts to even a few, as is done by leader-training methods of conducting projects.

The method demonstration in this survey ranks second but considerably lower in leader value, and then far lower come the result demonstrations. Applied to landscape projects, the difference would undoubtedly have been greater, for in many extension result demonstrations results are visible the same season. In landscape projects, a suitable demonstration takes a minimum of 3 years to establish.

The greatest argument in favor of training leaders is the fact that with a trained leader, an attractive home will result automatically on the initiative of the home owner. In a demonstration with the specialist preparing the plan and often doing most of the work, a beautiful home grounds may result, but seldom

in these cases can the home owner be looked upon as a leader who can help the "neighbor."

It is obvious that the cumulative effect of many such leaders throughout the State is going to accomplish results far beyond the specialist's individual efforts at establishing demonstrations.

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"You generally find that the man at the top is the one who has gone to the bottom of things." --Uncle Ezra.

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MORE OF THAT CONFERENCE

About 30 people attended the conference; some were college and station workers, and 2 or 3 were visitors interested in our program. The following-named specialists were present: Miss Lucile Smith, Joseph Oskamp, E. V. Hardenburg, and C. B. Raymond of New York; C. E. Van Deman of Vermont; E. P. Christopher of Rhode Island; A. J. Farley and C. H. Nissley of New Jersey; W. B. Nissley and J. U. Ruef of Pennsylvania; T. D. Gray and A. L. Keller of West Virginia; G. F. Warren, Jr. of Maine; and J. S. Gardner of Kentucky. There were other State specialists attending the horticultural meetings, but they were not at the conference.

The use of the term "tests" came in for earnest discussion. Prof. W. R. Schoonover, of California, sent in an interesting argument strongly defending the use of "tests" in his extension work. He thinks it is necessary for extension specialists to do testing, and states: "The Agricultural Extension Service has developed sufficient prestige that farmers are willing to take the word of agents for the value of a practice, and the visual demonstration, although valuable in a great many cases, is not so essential as it once was, but tests are essential in order that the agent may keep fully informed as to what practices will work in his community. He must constantly be developing new information which the experiment station is not in a position to do for him." Some of those present backed up this view of the situation. The writer stated that it is mostly a matter of nomenclature and psychology. Tests go with research language and demonstrations with proved facts, theoretically at least. However, it is impossible for research to prove everything in fruit and vegetable culture for every locality in every State, and extension must take for granted some chances on possible results. Congress might look with smiling approval on a proposed extension service appropriation for demonstrating, but very probably would balk at appropriating money for extension testing since there are other funds (research) appropriated for tests.

One of the items which came up for discussion was regarding the number of years cost-account records should be continued on a given crop, tomatoes for instance. A record covering 5 years of tomato production was presented. Exception

was taken to this with the explanation that 1 or 2 years would have sufficed for tomatoes, and then other crops could have been used, thus getting results on several crops rather than on only one in a given number of years.

One of the questions asked so often is, Why is it that the State horticultural specialists cannot get together for conferences as other groups do? Three or four small groups from four or five States get together occasionally to swap experiences, and are immensely benefited by so doing. One of the most valuable things that could happen to horticultural extension would be regional conferences of State horticultural specialists every year or every second year.

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"Even if we have chaos in our conditions, we need not have chaos in our ideas." --G. K. Chesterton.

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AN EFFECTIVE METHOD OF FRUIT EXTENSION WORK IN NEW JERSEY

By

Arthur J. Farley, Fruit Specialist
State College of Agriculture, New Brunswick, N. J.

The few remarks I have to make in connection with methods of fruit extension work in New Jersey may seem out of place in a horticultural science program, since I have nothing of a scientific nature to present. As a matter of fact, my appearance on this program is due entirely to a request from Prof. C. P. Close to take part in this horticultural extension conference, and not because I have any formula for making extension work more effective. I fully appreciate the fact that an extension program that appears to be very effective in one State may not be practical in another. It is for this reason that I question the value of my remarks before a group of extension and research men, representing States in which such a wide variation exists in the status of the fruit industry.

New Jersey, as you all know, is a relatively small State with the major part of the commercial fruit industry concentrated in a few rather well-defined areas. It is practical, therefore, for an Extension man at the college to keep in rather close personal touch with the fruit situation in these more or less concentrated areas. You are also reminded that, in New Jersey, the Extension horticulturist in pomology is responsible for all phases of the fruit extension program, including plant pathology and entomology and, therefore, cooperates with several departments of the agricultural college and experiment station in the development and promotion of a fruit extension program designed to serve the best interests of the fruit industry. This means that he is called upon to render service in connection with the control of insects and diseases, just as much as he is with the establishment of orchards, soil improvement, pruning, thinning, and other phases of orchard management. This program involves the usual features, such as the preparation of news articles, meetings, demonstrations, personal service, and any other methods that are needed to make the work effective.

The particular feature in the fruit extension program in New Jersey that I wish to discuss briefly at this time has to do with a series of weekly meetings held during the spraying season, or from early in April until about the middle of August. Such meetings have been held in three of the more important fruit-growing sections in the southern part of the State for several years. They are held at the same time and place each week, unless a change is made to allow for some special demonstration or to visit an orchard to observe the results of some special practice. Timely information regarding insect and disease control, spray residue, cultural practices, crop prospects, harvesting, and grading and marketing, is presented at these meetings. Representatives of the departments of entomology, plant pathology, and horticulture are present at some of the meetings to discuss problems of special interest at critical times during the development of the crop. The county agricultural agents are also present and, therefore, not only have an opportunity to take part in the discussion, but also are in a position to pass on to other growers in their counties timely information on problems of immediate interest. Previous to each meeting, the extension specialist procures the latest information available on problems of special interest to fruit growers at that particular time. This information is procured through observations made in local orchards, consultation with members of the research staff, growers, and county agents, publications, and through any other source that may be available. The meetings are usually held in a packing house or orchard, and are very informal. Ample opportunity is provided for questions and discussion of special problems. In most cases, the discussions at any given meeting involve questions that are uppermost in the growers' minds at that particular time, rather than something that may need attention at some future date. It may be scab-spore development, peach-bud injury, codling-moth activity, growth status, fertilization, cover crops, or any of the many problems with which growers are confronted during the growing season. Demonstration material is presented in the form of insect and disease specimens, stages of fruit-bud development, spray materials and accessories, roots, leaves, and twigs from normal and abnormal trees, soils, new types of packages, etc.

The attendance at these meetings ranges from 15 to over 50 growers. Between 150 and 200 individual growers attend these meetings during the season, some regularly, and others at times when they desire some special information. These growers represent over 10,000 acres of fruit, located in four counties. Furthermore, some growers who attend quite regularly make a practice of passing certain information on to their neighbors who may not be able to attend. This practice, combined with the fact that the county agents are kept informed of the latest developments each week, results in a still wider influence from these meetings than might be indicated by the actual attendance. Furthermore, the regular weekly preparation for the meetings by the extension specialist through conference and actual orchard observations, makes it possible for him to keep in close touch with the fruit situation throughout the season, thus providing timely material for use in other fruit-growing sections. This in itself might justify the amount of time devoted to one project, namely, 2 days a week for 20 weeks.

It is apparent that the number of meetings one specialist can attend each week, in addition to other activities, is limited, but under the conditions

existing in New Jersey, I feel that these weekly meetings are one of the most effective means of carrying on extension work among commercial fruit growers. This type of service might be compared to the service rendered the purchaser of a new automobile, with the exception that there is no direct service charge. The owner is provided with rather complete information regarding the construction and operation of the car, but what is most useful is the service received to keep the car operating efficiently, and the prompt attention received when something gets out of order. So it is with the fruit grower, who is provided with spraying recommendations, articles and talks on pruning, fertilization, soil management, and all the other phases of his complicated and highly specialized business; the service that is most useful is that which applies to the immediate problems of this week or today in his orchard, rather than to those problems of next month or the entire year throughout the State.

As I remarked at the beginning of this discussion, such a plan may not be practical in other States, but judging from the comments made by growers, together with the grade of fruit they produce, these meetings are of inestimable value to the fruit industry in New Jersey.

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"A man can't get ahead in this world unless he was born with a head and knows how to use it." --Uncle Ezra.

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A FRUIT LOCATION SERVICE FOR NEW YORK

By

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The nature of the soil has long been considered, by most horticulturists, to have an important bearing on the success of an orchard, but little has been done about it. The soil question at times has been raised by fruit growers, often as the result of unusual climatic or economic conditions. In New York State there was a series of very wet seasons in 1925-26-27 which greatly aggravated the naturally slow drainage prevailing on many heavy, relatively level soils. This, together with the accumulating force of the agricultural depression with its accompanying low prices, resulted in some orchards' being operated at a loss, which formerly had shown a profit. On the other hand, there were orchards apparently no better managed that continued to be profitable. Indications pointed strongly to soil variations as one of the fundamental reasons for these differences. Thus climatic economic conditions played a large part in developing soil consciousness in New York fruit growers.

In 1930 the department of pomology began an intensive study of the soils in the fruit-growing areas of the State as part of the larger State program of land utilization. The data are reported in nine bulletins of the Cornell University Agricultural Experiment Station and several papers. Much useful knowledge

was gained of the soil factors contributing to the large variations in yield that exist between fruit plantings on different soils. The results of these investigations made it possible to forecast with a high degree of accuracy the relative longevity, growth, and production of fruit plants on any particular field. Thus was established the ground work for a fruit location service. It but remained to bring the results of this investigational work to bear on the very practical problems of the fruit grower, in selecting fields for new plantings, or in better adjusting the management of existing plantings to the soil environment.

Through the extension service the early results of the orchard soil studies were brought to the attention of fruit growers at winter meetings, schools, and the meetings of the State Horticultural Society. County agents in the fruit areas where the investigations were conducted were kept informed of the progress of the work. Stops were made on fruit tours to view the condition of the orchards, root distribution, and the character of the soil in deep excavations. Thus the farm people were generally conscious of a fruit soil problem, and knew that information was available to help them solve it.

With the renewed interest in planting that followed the cold winter, it was a simple matter to organize a fruit location service through the county agents in the usual manner of carrying on extension work. The number of visits that can be made, of course, will vary with the acreage covered. Sometimes several fields on the same farm are examined, but on the average eight visits a day are made. Each field examined is definitely rated on the various factors involved in its adaptation to fruit. Suggestions on the variety or kind of fruit best suited to the location, or on the management of existing plantings, are given. The information is written, in the field, on a blank form with a carbon copy that goes to the county agent, so that a permanent record on the fruit prospects of this field is on file in the farm-bureau office.

This service fits in nicely with our other extension activities. There is a time in the late summer and fall, after packing demonstrations are held and before pruning demonstrations begin, when there is a slackening in other field work. Again in the spring, after winter meetings are over, there is a time to take care of such requests as were not satisfied in the fall. In the $2\frac{1}{2}$ years that the fruit location service has been offered, 690 farms have been visited involving an inspection of 8,115 acres of land in 23 counties.

The fruit industry of this State has been adjusting itself to climatic influences for many years, so that now plantings are largely consolidated near large bodies of water. The next step will be to adjust to soil influences within these favored areas. Numbers of fruit trees are now at a low point and this is the opportune time to provide for better-located plantings. The New York State Farm Bureau Federation, recognizing the importance of the fruit location service, made the following recommendations in its 1935 and 1936 annual reports: "It is recommended that growers intending to make new plantings take advantage of the orchard location service made available by the college of agriculture, through the county farm bureaus, in order that a minimum of error may result in the location of plantings."

APPLE POLLINATION DEMONSTRATIONS
by
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State College, Pennsylvania

Securing an adequate set of fruit is an annual problem in many Pennsylvania orchards, but no doubt similar conditions exist in all regions where apples are being produced. A number of reasons might be advanced for this variation in productiveness, but in Pennsylvania a small percentage of the shy-bearing orchards are catalogued in a group characterized by poor location, involving topography. A larger percentage is in the class of undernourished orchards, and the third class, receiving proper care without an ample set, is generally in the group requiring additional pollination.

The pollination problem is not serious in the smaller orchards, but in the large commercial orchards, made up of one or two varieties, the losses attributed to improper pollination are greater than the cost of any annual orchard operation. Since the financial losses, resulting from the extensive planting of one or two varieties, are evident to some growers, efforts should be made to assist other growers who are confronted with a similar problem in order to place these orchards on a profitable basis.

During the past few years considerable interest has been manifested by Pennsylvania orchardists in the means of increasing the set of fruit in Delicious and York Imperial plantings. A 20-acre block of 18-year-old Delicious in the Peerless Orchards at Hamburg was selected in 1930 for a pollination demonstration. Bouquets of Fameuse, Golden Delicious, Grimes Golden, and Gano were placed in every third tree in every third row, and several branches in every fifth tree were top-worked to Grimes Golden and Golden Delicious.

The yields for the ensuing 4 years were as follows:

<u>Year</u>	<u>Packed bushels</u>
1929 - - - - -	1,800
1930 - - - - -	8,500
1931 - - - - -	13,000
1932 - - - - -	6,000
1933 - - - - -	14,750

Since York Imperial orchards represent a large percentage of the acreage in Franklin, Adams, and Cumberland Counties, the Kuhn Orchard at Cashtown, Adams County, was chosen in 1933 for demonstration purposes. The same course of procedure was used as in the Peerless orchards, with one exception. Unless meetings are held at the orchards prior to harvesting the fruit, it is difficult to convince all growers as to the relative importance of certain varieties as pollinators for other varieties. Therefore, seven branches of equal diameter on the same tree were covered with muslin bags in the pre-pink stage. The bags were not removed until after petal fall, except at the time when the blossoms

on each limb were hand-pollinated with Delicious, Golden Delicious, Grimes Golden, Jonathan, York Imperial, and Baldwin pollen. In the case of York Imperial, the muslin bag was removed and each blossom was brushed.

The results made it possible to show the growers that there is a difference in the value of varieties for pollinating purposes. The following data present the results of the hand-pollination of York Imperial:

Pollen	Spurs on branch	Spurs setting fruit	Set
	<u>Number</u>	<u>Number</u>	<u>Percent</u>
Delicious	88	65	74
Golden Delicious ...	72	51	71
Grimes Golden	91	75	82
Jonathan	93	61	65
York Imperial	113	10	9
Baldwin	130	40	30
Check*	96	1	-1

* The muslin sack was not removed until after petal fall.

The use of bouquets in the Kuhn orchard showed a decided increase in yield. The rows of 26 trees each containing bouquets produced 231 bushels; adjacent rows without bouquets produced 190 bushels. The check rows five rows distant yielded 110 bushels, and those seven rows distant yielded 90 bushels per row.

At the request of William Hess of Waynesboro, a 30-year-old block of Paragon in the S. S. Hess orchard was selected for a pollination demonstration in 1936. This block of trees is located on limestone soil, and receives an application of manure and 8 pounds of cyanamid per tree each spring. The yield has never before exceeded 1,200 bushels, whereas 55,000 bushels were packed in 1936. Mr. J. L. Mecartney, assistant extension pomologist, placed bouquets of Ben Davis, Gano, Delicious, York Imperial, and Jonathan blooms in every third tree in four different rows located five tree rows from each other. The average yields in the rows containing bouquets were as follows:

Variety	Bushels
Ben Davis and Gano	21.5
Delicious	20.2
York Imperial	25.0
Jonathan	17.3
Check*	12.4

* The two outside rows on the east and west sides of the orchard were used as checks.

The use of bouquets is an emergency measure, consequently top-working is recommended as well as the use of satisfactory pollinators in making re-plants as vacancies occur.

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"Chase your work or it will chase you." - - Ben Franklin.

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PROCEDURE IN CONDUCTING FARM-GARDEN DEMONSTRATION FROM START TO FINISH

by

W. B. Nissley, Vegetable Specialist,
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There are several reasons why I have chosen this particular project in vegetable extension work for discussion before this group. First, farm gardens in Pennsylvania produce, in quantity and value, more vegetables than are grown for market. These gardens are an important part of the vegetable industry. Secondly, farmers are not in the habit of purchasing vegetables. If these products are not raised at home, many families either do without them or use few vegetables. The home garden, therefore, is important from the standpoint of both economy and health. Thirdly, this is a long-time project started 15 years ago. Most communities in the State have been contacted, and the plan is to cover the State completely. Each year many communities request repeat demonstrations. Interest is greater now than it was 15 years ago. Fourthly, this project is probably given more importance in Pennsylvania than in any of its bordering States where commercial gardening is more important.

The aim of this project is to have each farm produce a sufficient quantity, a wide variety, and a 12-months supply of vegetables. This means fresh vegetables from the garden during the 5 to 6 growing months, and a sufficient quantity dried, canned, and stored for the 6 to 7 unproductive months.

Extension programs are usually decided upon at community program-planning meetings during the fall and winter months. Should a community decide to include home garden work, it is desirable to cooperate with the home-economics extension program in its nutrition and health work. Canning and cooking demonstrations are held in connection with demonstration gardens. The planting plan is made out in accordance with the family budget needs as prepared by the home-economics specialist.

The first educational meeting is held during the winter months, at which meeting an illustrated talk is given covering all gardening operations from the starting of early plants to the midsummer treatment of the garden. A co-operator is selected to conduct the demonstration. During the past few years

the adult garden club idea, in which a group agrees or decides to put into practice the methods suggested for a single demonstrator, has become important.

For those who grow their own plants, a leaflet describing soil mixing, seed sowing, transplanting, watering, ventilating, and maintaining proper temperatures for hothouse- or frame-growing of plants is provided the cooperator and others interested.

To eliminate the thought by some that the garden is a necessary evil and requires too much attention at a busy season, the following lay-out is suggested in a demonstration garden: (1) The size of the garden is determined by the size and needs of the family, usually from 1/4 to 1/2 acre, depending upon the method of handling. (2) The location should be convenient to the house. (3) In shape it should be rectangular or square, if possible, for ease in plowing, harrowing, and cultivating. (4) Vegetables should be planted in rows running lengthwise, spaced for either horse or wheel-hoe cultivation as desired. (5) Vegetables to be grown on the level ground avoiding ridge or furrow methods which require hand labor. (6) Group the wide-row crops such as cabbage, tomatoes, peppers, beans, peas, corn, etc., and use horse cultivation. Group the narrow-row crops such as beets, carrots, spinach, onions, lettuce, radishes, etc., for wheel-hoe or hand cultivation. With this convenient lay-out, maximum crops may be grown with minimum labor.

Each year a revised mimeographed sheet giving recommended varieties is made up for home gardeners' benefit. Twenty-five to thirty different crops are suggested for a complete garden. Some of these crops, such as New Zealand spinach, broccoli, Chinese cabbage, kohlrabi, endive, etc., are not planted in a large way, yet they furnish variety. Information is given on fertilization, succession cropping, and disease and insect control.

A garden meeting is held at each demonstration during the summer, at which time the points mentioned are emphasized and demonstrated by the extension specialist in cooperation with the county and home agents.

Where there is sufficient interest, a fall storage meeting is held, at which time vegetables are harvested and prepared for storage. Cellar, pit, barrel, and trench methods of storage are demonstrated.

Complete yield, cost, and labor records are hard to get from busy farmers; however, each year there are some who are willing to keep records, and these are summarized. A 1/4- to 1/2-acre garden produces from \$100 to \$300 worth of vegetables. In 1936, 8 small gardens, averaging 1/6 acre, produced per garden, \$123.76 worth of vegetables at a cost including labor of \$33.81, leaving a profit of \$89.95 each. The average number of different kinds of vegetables per garden was 25. Besides all the vegetables used fresh, the average quantity canned per garden was 267 quarts, and 506 pounds were stored.

There are about 190,000 farms in Pennsylvania. The value of vegetables grown in farm gardens is approximately \$10,500,000. About two-thirds of all

rural communities in the State have been contacted through demonstrations. From 125 to 150 demonstrations a year for this particular project is the capacity for two specialists.

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"For a good memory test, try to remember the things that worried you yesterday." - - - Uncle Ezra.

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1936 RESULTS OF BAND APPLICATION OF FERTILIZER
ON PEAS, STRING BEANS, AND SWEET CORN
by

C. H. Nissley, Vegetable Specialist,
State College of Agriculture, New Brunswick, N. J.

The placement of fertilizer in bands for the growing of vegetable crops is by no means a new idea. Vegetable growers have followed this practice for the past 40 years or more. Many growers have explained to me the old practice which they followed, of plowing the ground away from the row with a one-horse plow while the plants were still young, applying the fertilizer in the furrow, and then either plowing or cultivating the ground back into the furrow, covering the fertilizer. A practice used by some market gardeners in the growing of carrots, early cauliflower, cabbage, kohlrabi, and other crops, is to make a shallow furrow close to the row with a push plow, apply the fertilizer by hand in this furrow and cover it with a hand plow.

Although the practice of fertilizer placement is not new, the use of labor-saving machinery which will apply this fertilizer along the row and sow the seed at the same time is new. This practice has been adopted in the growing of potatoes, and is a universal and recommended practice by the majority of growers. It is the opinion of some that this fertilizer placement along the row is purely experimental. However, in 1931, an experiment on string beans was conducted at Winter Garden, Fla., the results of which experiment were encouraging. The records show that where the fertilizer was mixed with the soil below the seed, a yield of 1,195 pounds of beans per acre was obtained. Where the fertilizer was applied in 2-inch bands 3 inches below the seed, the yield was 2,620 pounds to the acre, and where the fertilizer was applied in 2-inch bands, one on each side of the row, and 1 1/2 inches below the level of the seed, the yield was 3,216 pounds to the acre, or more than 2 1/2 times the yield where the fertilizer was mixed with the soil in the row.

The band application of fertilizer had also been adopted prior to 1935 by large growers of beans in Pennsylvania and neighboring States. Last year (1935) 43 demonstrations, which included peas, string beans, lima beans, sweet corn, tomatoes, peppers, and other crops were planted in New Jersey. Stress was placed on peas, beans, and sweet corn. This year there were only 18 demonstrations planted, which included early peas, string beans, and sweet corn.

With the results secured in New Jersey these 2 years, there can be little doubt in the minds of the cooperators and other growers that this type of fertilizer application is ideal for these crops. First, the seed and the fertilizer are entirely separate, and there can be no possible injury to the seed by the fertilizer. Fertilizer injury is often the cause of a lack of germination of the seed and the final killing of the seed or young plant when the fertilizer has been applied in the row just previous to seeding or planting time. In no instance was this burning effect noticed where the band method was properly applied.

Secondly, the increased growth of the plants during the first 3 to 4 weeks is apparent, because the fertilizer is placed from 3 to 4 inches in the ground in moist soil, and under these conditions the plant nutrients are more readily available for plant use.

Thirdly, the ease of operation of applying fertilizer at the time of planting, together with the saving of labor, is an important factor and one which cannot be overlooked during these times when farm labor is more or less hard to secure.

The results of the demonstrations on peas and beans during the past 2 years show that practically as large yields, and in some instances larger yields, were obtained where one-half of the amount of fertilizer was applied by the band method as when applied according to the cooperator's own practice. The saving of fertilizer on a large acreage, with an insured larger yield, is worth considering.

I should like to present the following results obtained in 1936:

1936 Results of Fertilizer Placement

Crop and variety	Fertilizer	Pounds per acre	Method	Yield in bushels
<u>Peas</u>				
Pilot	4-9-5	500	Band	76.00
Do.	4-9-5	1,000	Band	72.75
Do.	4-9-5	1,000	Owner's*	67.50
Peter Pan	6-8-5	600	Band	130.00
Do.	6-8-5	1,200	Band	123.50
Laxton Progress	6-8-5	600	Band	129.00
Do.	6-8-5	1,200	Band	139.00
Wyoming Wonder	6-6-5	600	Band	165.50
Do.	6-6-5	600	Owner's*	93.00
<u>Beans</u>				
Bountiful	5-8-7	600	Band	344.00
Do.	5-8-7	600	Owner's*	295.00
Sure crop wax	6-6-5	600	Band	242.00
Do.	6-6-5	600	Owner's*	172.00

*Broadcast over the row about 10 days after planting seed.

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Received During November 1936

Arizona College of Agriculture, Tucson.
Use of water by Washington Navel oranges and Marsh grape-fruit trees in Salt River Valley, Arizona. Sta. Bull. 153, 1936.

Colorado State Agricultural College of Colorado, Fort Collins.
Western rose curculio. Sta. Bull. 432, 1936. Equipping a small irrigation pumping plant. Sta. Bull. 433, 1936.

Maine College of Agriculture, Orono.
Factors affecting the cooking qualities of potatoes. Sta. Bull. 383, 1936.

Michigan Michigan State College, East Lansing.
Insecticide experiments on codling moth in Michigan, 1929-1935. Sta. Spec. Bull. 277, 1936.

Nebraska College of Agriculture, Lincoln.
Some factors affecting the cooking quality of the pea and Great Northern types of dry beans. Sta. Res. Bull. 85, 1936.

New Hampshire University of New Hampshire, Durham.
Studies of contact insecticides: XI, Further determinations of the penetration of arsenic into insects. Sta. Tech. Bull. 65, 1936.

New Jersey State College of Agriculture, New Brunswick.
Analyses of materials sold as insecticides and fungicides during 1936. Sta. Bull. 617, 1936.
The European corn borer in New Jersey. Sta. Circ. 370, 1936.

New York New York State College of Agriculture, Ithaca.
Some factors influencing growth and fruit-setting in the pepper. Sta. Mem. 190, 1936.
Fire blight, overwintering, dissemination, and control of the pathogene. Sta. Mem. 193, 1936.

New York New York State Experiment Station, Geneva.
Wild bramble eradication. Sta. Bull. 674, 1936.
Retarded foliation in black raspberries and its relation to mosaic. Sta. Bull. 675, 1936.
Improvements in the manufacture and the preservation of grape juice. Sta. Bull. 676, 1936.

Tennessee College of Agriculture, Knoxville.
Pyrethrum in Tennessee. Sta. Circ. 59, 1936.

Received During December 1936

California College of Agriculture, Berkeley.
 Biology of the mealy plum aphid. *Hilgardia*, vol. 10,
 no. 7.
 Symptomatic and etiologic relations of the canker and the
 blossom blast of *pyrus* and the bacterial canker of prunes.
 Inheritance of resistance to powdery mildew in beans.
 Spotted wilt of the sweet pea. *Hilgardia* vol. 10, no. 8.

Connecticut Connecticut Agricultural Experiment Station, New Haven.
 Dutch elm disease, *Graphium ulmi*. *Sta. Bull.* 389, 1936.

Georgia Georgia Experiment Station, Experiment.
 Dahlia variety test, 1936. *Sta. Circ.* 111, 1936.

Indiana Purdue University, La Fayette.
 Insect pests of muck crops. *Sta. Circ.* 223, 1936.

Louisiana Louisiana State University, Baton Rouge.
 Culture of tung-oil trees in Louisiana. *Sta. Circ.* 17,
 1936.

Michigan Michigan State College, East Lansing.
 Commercial mushroom production, a highly competitive,
 scientific business. *Sta. Circ.* 158, 1936.

Missouri College of Agriculture, Columbia.
 Fruit varieties for Missouri. *Sta. Bull.* 371, 1936.

Oregon Oregon State Agricultural College, Corvallis.
 Influence of commercial fertilizers on yields, grades, and
 net value of potatoes in Hood River Valley. *Sta. Bull.*
 343, 1936.
 Effect of sulfur sprays on corrosion of prune cans. *Sta. Bull.*
 345, 1936.
 Influence of irrigation upon important small fruits. *Sta. Bull.*
 347, 1936.

South Carolina Clemson Agricultural College of South Carolina, Clemson.
 Irish potato fertilizer experiments. *Sta. Circ.* 55, 1936.

Tennessee College of Agriculture, Knoxville.
 Studies of the ecology and control of cutworms in Tennessee.
 Sta. Bull. 159, 1936.

Vermont College of Agriculture, Burlington.
 Sterility in pears. *Sta. Bull.* 408, 1936.

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Never tell anybody all you know; it might be embarrassing if you get an
encore.

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HORTICULTURAL EXTENSION PUBLICATIONS

Received During November 1936

Massachusetts Massachusetts State College, Amherst.
 Raspberry growing in Massachusetts. Ext. Leaflet 48,
 rev., 1936.

New Mexico New Mexico College of Agriculture, State College.
 Growing the home garden. Circ. 142, 1936.

Received During December 1936

California College of Agriculture, Berkeley.
 Essentials of irrigation and cultivation of orchards.
 Ext. Circ. 50, rev., 1936.

Georgia Georgia State College of Agriculture, Athens.
 Successful cooperative marketing. Ext. Circ. 183, rev.,
 1936.

Maine College of Agriculture, Orono.
 Potatoes from the consumer's standpoint. Ext. Bull.
 230, 1936.

Michigan Michigan State College, East Lansing.
 Pruning and care of ornamental trees and shrubs. Ext.
 Bull. 172, 1936.

Minnesota University Farm, St. Paul.
 Herbs - Their culture and use. Ext. Pamph. 38, 1936.

Puerto Rico University of Puerto Rico, Rio Piedras.
 El huerto y su cultivo, (Orchard management), Bol. de
 exten. no. 10, 1936.

Tennessee College of Agriculture, Knoxville.
 Better home grounds: Growing and transplanting trees
 and shrubs. Ext. Pub. 196, 1936.

Vermont College of Agriculture, Burlington.
 The 4-H garden in Vermont, Ext. Circ. 89, 1936.

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"The biggest room in the world is the room for improvement." --Uncle Ezra.

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UNITED STATES DEPARTMENT OF AGRICULTURE PUBLICATIONS

Published During November 1936

The farm garden. F. B. 1673. 10 cents.

Handling, precooling, and transportation of Florida strawberries. T. B. 535. 10 cents.

Susceptibility of grape rootstocks to root knot nematode. Circ. 405. 5 cents.

Published During December 1936

Vegetable seeds for the home and market garden. F. B. 1390 rev. 5 cents.

Arbor Day, its purpose and observance. F. B. 1492. 5 cents.

Peach brown rot and scale. F. B. 1527 rev. 5 cents.

The Mexican bean beetle in the East and its control. F. B. 1624 rev. 5 cents.

Growing sweet corn for the cannery. F. B. 1634 rev. 5 cents.

Life history and control of the Asiatic garden beetle. Circ. 246 rev. 5 cents.

Fruit and vegetable quarantine, notice of quarantine No. 56, with revised regulations. Effective December 1, 1936. Q. 56 rev.

Modification of Dutch elm disease quarantine regulations. Effective November 9, 1936. Q. 71, rev.

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Sonny's sayings - "Drandpa says it's yer mind what makes yer legs an arms go - I hope mine don't run down like Drandpa's done."

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